

REMARKS

By this Amendment, claims 1 and 11 have been amended. Claims 90-107 have been added. Claims 5, 7, 8, and 17-89 have been withdrawn from consideration. Claims 1-107 are pending.

Claims 1-4, 6, and 11-16 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent Application No. 2002/0168820 to Kozicki et al.. Claims 9 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kozicki et al. Applicants respectfully traverse the rejections.

The present invention as recited in amended claim 1 is a method of forming a chalcogenide comprising device. The method includes "forming a first conductive electrode material on a substrate" and "forming a metal doped chalcogenide comprising material over the first conductive electrode material, the chalcogenide comprising material comprising the metal and A_xB_y, where "B" is selected from the group consisting of S, Se and Te and mixtures thereof, and where "A" comprises at least one element which is selected from Group 13, Group 14, Group 15, or Group 17 of the periodic table, the metal doped chalcogenide comprising material having an outer surface with an uneven surface characteristic." The method also includes "forming a passivating material over the outer surface of the metal doped chalcogenide comprising material," and "depositing a second conductive electrode material over the passivating material, and forming the second conductive electrode material into an electrode of the device," "wherein the passivating material is sufficient to improve the uneven surface characteristic such that after subsequent deposition of a second conductive electrode material on the outer surface, the chalcogenide comprising material is protected from being etched."

The present invention as recited in amended claim 11 is a method of forming a chalcogenide comprising device. The method includes “forming a first conductive electrode material on a substrate,” “forming a metal doped chalcogenide comprising material over the first conductive electrode material, the chalcogenide material comprising the metal and A_xB_y , where “B” is selected from the group consisting of S, Se and Te and mixtures thereof, and where “A” comprises at least one element which is selected from Group 13, Group 14, Group 15, or Group 17 of the periodic table, the metal doped chalcogenide comprising material having an outer surface with an uneven surface characteristic,” “forming a passivating material on the outer surface of the metal doped chalcogenide comprising material,” and “depositing a second conductive electrode material over the passivating material, and forming the second conductive electrode material into an electrode of the device,” “wherein the passivating material is sufficient to improve the uneven surface characteristic such that after subsequent deposition of a second conductive electrode material on the outer surface, the chalcogenide comprising material is protected from being etched.”

In contrast to the present invention as recited in amended claim 1, Kozicki et al. discloses the formation of layer 155 between the oxidizable electrode and the ion conductor. Layer 155 has a high resistance or restricts ion migration. Kozicki et al. does not teach or suggest “forming a metal doped chalcogenide comprising material over the first conductive electrode material,” “the metal doped chalcogenide comprising material having an outer surface, the outer surface having an uneven surface characteristic,” and “forming a passivating material over the outer surface of the metal doped chalcogenide comprising material,” “wherein the passivating material is sufficient to improve the uneven surface characteristic such that after subsequent deposition of a second conductive electrode material on the outer surface, the chalcogenide comprising material is protected from being etched.” Accordingly, Kozicki et al. does not anticipate or render obvious the present invention.

In contrast to the present invention as recited in amended claim 11, Kozicki et al. discloses the formation of layer a high resistance or ion-migration resisting layer 155 between the oxidizable electrode and the ion conductor. Kozicki et al. does not teach or suggest a method of forming a chalcogenide comprising device that includes "forming a metal doped chalcogenide comprising material over the first conductive electrode material...the metal doped chalcogenide comprising material having an outer surface with an uneven surface characteristic," "forming a passivating material on the outer surface of the metal doped chalcogenide comprising material...wherein the passivating material is sufficient to improve the uneven surface characteristic such that after subsequent deposition of a second conductive electrode material on the outer surface, the chalcogenide comprising material is protected from being etched."

Independent claim 1, and its dependent claims 2-4, 6, 9-10, and 90-96, and independent claim 11, and its dependent claims 12-16, and 97-99 are submitted as being patentable over the cited references.

New claims 100-107 have been added to round out the scope of protection afforded the invention. The new claims also are directed to a chalcogenide comprising devices having a passivating layer for improving an uneven surface characteristic to prevent a chalcogenide layer from being etched or exposed through a subsequent deposit and conductive electrode material.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

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Respectfully submitted,

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